Continuation-in-part öf Serial No. 09/676,457
Preliminary Amdt. dated April 13, 2004
Reply to Office action of January 14, 2004

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (previously presented): A method for predicting the future state of a weather condition relative to an aircraft, the method comprising:

accessing a first weather radar image generated relative to the aircraft;

accessing a second weather radar image generated after said first weather radar image and having a similar relationship to the aircraft as said first weather radar image;

mapping said first weather radar image onto said second weather radar image;

comparing said first and second weather radar images;

forecasting information describing a weather condition represented by said first and second weather radar images;

retrieving a phase of flight of the aircraft; and

generating a warning as a function of said forecast information describing a weather condition and said phase of flight.

Claim 2 (cancelled).

Claim 3 (previously presented): The method recited in claim 1, wherein said second weather radar image further comprises a weather radar image generated at a time after generation of said first weather radar image.

Claim 4 (previously presented): The method recited in claim 1, wherein said generating a warning as a function of said forecast information describing a weather condition and said phase of flight further comprises determining a coincidence of the aircraft and said weather condition.

Claim 5 (previously presented): The method recited in claim 4, wherein determining a coincidence of the aircraft and said weather condition further comprises retrieving a flight path of the aircraft and comparing said flight path with a location of said weather condition.

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Claim 6 (previously presented): The method recited in claim 5, wherein said retrieving a phase of flight of the aircraft further comprises retrieving an intended phase of flight at said coincidence of the aircraft and said weather condition; and

said generating a warning as a function of said forecast information describing a weather condition and said phase of flight further comprises generating a warning as a function of said forecast information describing a weather condition and said intended phase of flight at said coincidence.

Claim 7 (previously presented): The method recited in claim 6, wherein said generating a warning further comprises generating a warning as a function of determining an intensity of said weather condition at said coincidence; and

comparing said intensity of said weather condition with said intended phase of flight at said coincidence.

Claim 8 (previously presented): The method recited in claim 1, wherein said forecast information further comprises information describing a track of said weather condition.

Claim 9 (original): The method recited in claim 8, further comprising:
    accessing a flight path of the aircraft;
    comparing said forecast track of said weather condition with said flight path; and
    predicting a coincidence of said flight path and said weather condition.

Claim 10 (original): The method recited in claim 9, further comprising generating an alert as a function of said coincidence of said flight path and said weather condition.

Claim 11 (original): The method recited in claim 10, wherein said alert is one or more of a visual alert and an aural alert.

Claim 12 (original): The method recited in claim 8, wherein:
    said forecasting information describing a weather condition further comprises forecasting a weather radar image representative of said weather condition relative to the aircraft; and

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said displaying information describing said forecast track of said weather condition further comprises displaying said forecast weather radar image.

Claim 13 (previously presented): A method for predicting the future position and intensity of a weather condition relative to an aircraft using a weather radar resident on-board the aircraft, the method comprising:

recording a first weather radar image generated by an onboard weather radar;

recording a second weather radar image generated after said first weather radar image;

spatially and temporally mapping said first weather radar image onto said second weather radar image;

predicting a future track of a weather condition as a function of said first and second weather radar images;

displaying said predicted future track of said weather condition;

retrieving a phase of flight of the aircraft; and

determining a potential threat to the safety of flight as a function of said weather condition and said phase of flight.

Claim 14 (original): The method recited in claim 13, further comprising:

retrieving a stored flight path of the aircraft;

comparing said flight path with said predicted future track of said weather condition; and

determining a coincidence of said flight path and said weather condition.

Claim 15 (previously presented): The method recited in claim 14, further comprising generating a warning as a function of said coincidence of said flight path and said weather condition.

Claim 16 (original): The method recited in claim 15, wherein:

each of said first and second weather radar images further comprise respective first and second images representative of said weather condition;

said comparing said first and second weather radar images further comprises comparing first and second states of said weather condition; and

forecasting a future state of said weather condition.

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Claim 17 (previously presented): The method recited in claim 16, wherein:

said retrieving a phase of flight of the aircraft further comprises retrieving an intended phase of flight of the aircraft at said coincidence of said flight path and said weather condition; and

said determining a potential threat to the safety of flight further comprises determining a potential threat to the safety of flight as a function of said future state of said weather condition and said intended phase of flight.

Claim 18 (original): The method recited in claim 17, wherein said generating a warning is further a function of said potential threat to the safety of flight.

Claim 19 (original): The method recited in claim 18, wherein said displaying said predicted future track of said weather condition further comprises displaying one or more of a future position and a future intensity of said weather condition.

Claim 20 (currently amended): A method for using an electronic circuit to predict the future position and intensity of a weather condition relative to an aircraft using a weather radar resident on-board the aircraft, the method comprising:

recording a first weather radar image generated by an onboard weather radar;

recording a second weather radar image generated at a time after said first weather radar image;

accessing said first and second recorded weather radar images;

with the electronic circuit, referencing said first and second recorded weather radar images to a common physical location;

with the electronic circuit, analyzing said first and second weather radar images;

with the electronic circuit, predicting a future track of one or more weather cells as a function of said analyzing said first and second weather radar images;

displaying said predicted future track of one or more of said weather cells;

accessing an intended flight path of the aircraft;

accessing a phase of flight of the aircraft;

with the electronic circuit, predicting a coincidence of said intended flight path and said weather condition; and

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with the electronic circuit, determining a potential threat to the safety of flight as a function of said coincidence of said intended flight path, said phase of flight, and said weather condition.

Claim 21 (previously presented): The method recited in claim 20, wherein said predicting a coincidence of said intended flight path and one or more of said weather cells further comprises with the electronic circuit, comparing said predicted future track of one or more of said weather cells with said intended flight path.

Claim 22 (currently amended): An electronic circuit for use with a weather radar system to predict the future state of a weather condition relative to an aircraft, the electronic circuit comprising:

a memory for storing a plurality of machine instructions;

a processor coupled to receive a signal representative of a phase of flight of the aircraft and further coupled to said memory for accessing said plurality of machine instructions, said processor accessing a phase of flight of the aircraft and executing said plurality of machine instructions to implement a plurality of functions, said functions comprising:

a) accessing a first weather radar image generated relative to the aircraft;

b) accessing a second weather radar image generated after said first weather radar image and having a similar relationship to the aircraft as said first weather radar image;

c) referencing said first weather radar image to said second weather radar image;

d) comparing said first and second weather radar images;

e) d) forecasting as a function of said first and second weather radar images information describing a weather condition represented by said first and second weather radar images; and

f) e) generating a warning as a function of said phase of flight and said information describing a weather condition represented by said first and second weather radar images.

Claim 23 (original): The electronic circuit recited in claim 22, wherein said plurality of functions further comprises generating a video signal representative of said forecast weather condition information.

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Claim 24 (original): The electronic circuit recited in claim 23, wherein:

said processor is further coupled to receive from a flight management computer a signal representative of the aircraft's intended flight path;

said forecasting information describing a weather condition further comprises forecasting a future track of said weather condition; and

said plurality of functions further comprises:

comparing said forecast track of said weather condition with said flight path; and

predicting a coincidence of said flight path and said weather condition.

Claim 25 (original): The electronic circuit recited in claim 24, wherein said forecasting information describing a weather condition further comprises forecasting a state of said weather condition at or about said coincidence.

Claim 26 (previously presented): The electronic circuit recited in claim 25, wherein said generating a warning further comprises generating a warning signal as a function of said coincidence, said phase of flight, and said state of said weather condition at or about said coincidence.

Claim 27 (original): The electronic circuit recited in claim 26, wherein:

said processor is further coupled to receive from a flight management computer a signal representative of the aircraft's intended phase of flight at or about said coincidence; and

wherein said generating a warning signal is further a function of said intended phase of flight.

Claim 28 (original): The electronic circuit recited in claim 27, further comprising a weather radar unit coupled to said processor.

Claim 29 (currently amended): An electronic circuit for coupling to a weather radar system on-board an aircraft to display weather information and forecast weather data relative to a phase of flight of the aircraft, the processor comprising:

a weather radar processor adapted to receive a signal representative of a phase of flight of the aircraft and further adapted to receive first and second weather radar return signals from a receiver portion of a weather radar system resident on-board an aircraft and convert said first

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and second weather radar return signals into first and second weather radar image signals representative of weather information relative to said aircraft contained in said weather radar return signals;

a memory coupled to said processor and adapted to receive and store said first and second weather radar image signals;

a weather incident prediction function operated by said processor and coupled to said memory to receive first and second different ones of said stored weather radar image signals, said weather incident prediction function adapted to forecast future weather information relative to said aircraft as a function of said first and second stored weather radar image signals, and generate a signal representative of said future weather information; and

a threat prediction function operated by said processor and coupled to receive ~~both said~~ a signal representative of a phase of flight of the aircraft and said signal representative of said future weather information, said threat prediction function adapted to compare said future weather information and said phase of flight and predict a threat to the safety of flight as a function of said comparison.

Claim 30 (original): The electronic circuit recited in claim 29, wherein:

said storage of said weather radar image signals is further a function of time; and

said forecast of future weather information relative to said aircraft is further a function of said time.

Claim 31 (previously presented): The electronic circuit recited in claim 30, wherein said future weather information further comprises information describing both a predicted future intensity and a predicted future track of one or more weather cells described by said weather information contained in said weather radar return signals.

Claim 32 (previously presented): The electronic circuit recited in claim 31, wherein:

said signal representative of a phase of flight of the aircraft further comprises a signal representative of an intended phase of flight of the aircraft;

said weather radar processor is further adapted to receive a signal representative of an intended flight path of said aircraft;

said weather incident prediction function is further adapted to predict a coincidence of said intended flight path and one or more of said weather cells; and

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said threat prediction function is further adapted to predict said threat at said coincidence as a function of said predicted future intensity of said one or more of said weather cells and said intended phase of flight at coincidence.

Claim 33 (previously presented): The electronic circuit recited in claim 31, wherein:

said weather radar processor is further adapted to receive a signal representative of an intended flight plan of said aircraft; and

said weather incident prediction function is further adapted to predict a coincidence of said intended flight plan and one or more of said weather cells.

Claim 34 (previously presented): The electronic circuit recited in claim 29, wherein said weather radar processor is further adapted to generate a warning signal as a function of said threat prediction function.

Claim 35 (previously presented): The electronic circuit recited in claim 34, wherein said weather radar processor is further adapted to determine two or more gradations of threat and to generate said warning signal as a function of said two or more gradations of threat.

Claim 36 (previously presented): The electronic circuit recited in claim 29, further comprising a display coupled to said processor and adapted to receive each of said weather radar image signals representative of weather information contained in said weather radar return signals and said signal representative of said future weather information, said display comprising a screen adapted to display each of said weather information contained in said weather radar return signals and said future weather information.

Claim 37 (original): The electronic circuit recited in claim 36, wherein said processor is further adapted to generate weather radar transmission signals; and further comprising:

a transmitter coupled to receive said weather radar transmission signals from said processor and output said weather radar transmission signals to a radar antenna; and

a receiver coupled to receive weather radar return signals from a radar antenna and output said received weather radar return signals to said processor.